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BOTANY.—*Cortical tracheids in the African cherry oranges* (*Citropsis species*, *Rutaceae: Aurantioideae*).¹ FRANK D. VENNING, University of Miami. (Communicated by WALTER T. SWINGLE.)

The African cherry oranges belong to the genus *Citropsis* and are small-fruited trees or shrubs rather closely related to the genus *Citrus* and even more closely related to *Atalantia* (Swingle and Kellerman, 1914). At the present time 11 species and 1 variety of *Citropsis* are known, ranging across tropical and subtropical Africa from Sierra Leone to Angola on the west coast and from Uganda south to Mozambique in East Africa, as well as in the regions of central Africa lying between (Swingle, 1943). Horticulturists and citrus growers will be interested in the African cherry oranges because of their ability to graft with and support *Citrus*. Gillet's cherry orange, *Citropsis gillettiana*, which makes a sizable tree up to 35 feet high, is the only rootstock that has been used successfully for *Citrus* at the Eala Botanic Garden in the Belgian Congo, where it has been employed on a fairly large scale for all the common species of *Citrus*. It has proved to be immune to the attack of a longicorn beetle very destructive to most *Citrus* rootstocks. Tests of other species of *Citropsis* as *Citrus* rootstocks are also being conducted by the Eala garden (Goossens, 1924; Staner, 1929; Pynaert, 1935; Fawcett, 1936).

Plant anatomists and histologists, no less than horticulturists, will find *Citropsis* an interesting genus because of the abundance of cortical tracheids which accompany or supplement the regular vascular supply in the flowers and fruits. These tracheids, unlike the regular elements of the vascular system, are derived from highly vacuolate cortical parenchyma of the pedicel and receptacle and from the "ground parenchyma" of the

floral organs. The individual tracheids usually retain the approximate isodiametric shape of the original parenchyma cell but develop highly lignified reticulate thickenings of the cell wall, after which the protoplast disintegrates. They are of quite general occurrence under many circumstances in plants of the orange subfamily. Their ontogeny has been described in detail in a separate paper (Venning, 1946), and further instances of their occurrence reported for several species of the genus *Citrus* (Venning, 1947).

The present survey determines in which floral organs and under what conditions cortical tracheids occur in all available species of the genus *Citropsis* and discusses their possible functions, together with their application as taxonomic characters.

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MATERIALS AND METHODS

Mature flower buds were used for this study. Fresh flowers and flower buds of *Citropsis gillettiana* Swing. and M. Kell. were collected from a plant growing at the U. S. Department of Agriculture's Plant Introduction Garden at Chapman Field, Fla. Similar material of *C. schweinfurthii* (Engl.) Swing. and M. Kell. was obtained from plants growing in the U. S. Department of Agriculture's Citrus greenhouse at Glen

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